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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,946	12/14/2001	Glenn E. Stewart	884.637US1	7393
21186	7590	10/09/2003	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			TRAN, THIEN F	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 10/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/016,946

Applicant(s)

STEWART, GLENN E.

Examiner

Thien Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3-10,12 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 2,11 and 13-16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the electronic component secured to the lower surface of the die must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-4 and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Terui (USPN 6,060,774).

Terui discloses the claimed method of fabricating an electronic package, the method comprising securing a die 4 to an interposer (1, 9); securing a laminated conductor (2,3,6) to the interposer to supply current to the die and mechanically support the interposer.

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Regarding claim 3, securing the laminated conductor to the interposer includes securing the laminated conductor to the interposer on a side of the interposer that includes the die.

Regarding claim 4, securing the laminated conductor to the interposer includes securing the laminated conductor adjacent to the die.

Regarding claim 8, the interposer is a composite metal 9 and organic material 1.

Regarding claim 9, the interposer includes an upper surface and a lower surface and the die and the laminated conductor are secured to the upper surface of the interposer with the laminated conductor adjacent to the die.

Regarding claim 10, solder balls 12 are Input/Output terminals. As a result, electronic component (Input/Output devices) are secured to the lower surface of the die through the interposer.

Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Yano (USPN 5,909,058).

Yano discloses the claimed method of fabricating an electronic package (Fig. 3), the method comprising securing a die 14 to an interposer 11; securing a laminated conductor 21 to the interposer to supply current to the die and mechanically support the interposer.

Regarding claim 5, securing the laminated conductor to the interposer includes soldering the laminated conductor to a surface on the interposer using reflowable solder balls 19 to establish an electrical connection.

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Claims 7 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinsman (USPN 6,002,165).

Kinsman discloses the claimed electronic package (Fig. 6) comprising an interposer 48; a die 68 secured to the interposer; and a laminated conductor (88, 46,90) secured to the interposer to mechanically support the interposer and supply current to the die.

Regarding claim 12, the laminated conductor includes a pair of conducting sheets 46, 88 separated by a dielectric layer 90.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yano (USPN 5,909,058) in view of Sakuma (JP 63-287026).

Yano as described above discloses forming underfilling areas between the laminated conductor 21 and the interposer 11 with an insulating agent 17. Yano does not specifically disclose the insulating bonding agent 17 being epoxy. It is old and well known in the art that insulating bonding agent is formed of epoxy as shown for example by Sakuma, wherein an insulating bonding agent 7 of epoxy is used. Therefore, forming the insulating bonding agent 17 in Yano using epoxy would have been obvious modification to better adhere the laminated conductor 21 to the interposer.

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Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman (USPN 6,002,165).

Kinsman does not disclose the interposer having a thickness that is less than 1 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the interposer having the claimed range of thickness, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In *re Aller*, 105 USPQ 233.

Regarding claim 18, Kinsman does not disclose the package being used in a computer system comprising a bus, a memory coupled to the bus, a processor. It is well known that a computer system comprises a bus, a memory coupled to the bus, a processor. It would have been obvious to form the package of Kinsman as part of the computer system for the advantages that the electronic package of Kinsman provides, improved heat transfer, reduced inductance. As a result, the processor is secured to the interposer such that the laminated conductor electrically connects the processor to the bus and mechanically supports the interposer during operation of the computer system.

Regarding claim 20, the die 68 contains the processor; therefore, the laminated conductor and the processor are secured to a common side of the interposer.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thien Tran whose telephone number is (703) 308-4108. The examiner can normally be reached on 8:30AM - 5:00PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

tt
September 29, 2003



Thien Tran
Patent Examiner
Technology Center 2800